

IN THE CLAIMS

Please cancel without prejudice claims 2, 7, 20-23, 25, and 27.

Please amend claims 1, 8-9, 24, 26, 28, and 48-49 as indicated below.

1. (Currently Amended) A computer implemented method of streaming a page of data, the method comprising:

allocating at least one object corresponding to the page of data, the page of data including one or more sub-components; and

executing the at least one object within a single request to an application server to provide the page, wherein, for each of the one or more sub-components, the executing comprises,

creating a proxy corresponding to the sub-component, the proxy representing a functionality of an object corresponding to the sub-component,

having the proxy to return the data corresponding to the sub-component to the at least one object if the corresponding data is in a cache memory without executing the object corresponding to the sub-component in order to obtain the data corresponding to the sub-component,

if the corresponding data is not in the cache memory, having the proxy to create the object corresponding to the sub-component to execute the object via a container associated with the object to generate the data corresponding to the sub-component, to return the generated data to the at least one object, and to store the data in the cache memory, including

generating at least one container object from the container, and

executing the at least one container object, including

executing a proxy if the at least one container object is a proxy.

executing a component if the at least one container object is a component,
and
executing a container if the at least one container object is a container; and
recursively performing allocating and executing the at least one object to process at least
one sub-object contained within the at least one object.

2. (Canceled)
3. (Original) The method of claim 1 further comprising:
allocating an occurrence of an associated base agent corresponding to the page of data.
4. (Original) The method of claim 3 wherein executing a component further comprises:
calculating output data for the occurrence of the component; and
streaming out the data to the associated base agent.
5. (Original) The method of claim 4 wherein streaming further comprises calling a stream
result method of the associated base agent.
6. (Original) The method of claim 4 further comprising creating a reference to the associated
base agent within the component.
7. (Canceled)

8. (Currently Amended) The method of claim ~~7~~1 further comprising recursively performing generating and executing the at least one container object to process at least one container sub-object contained within the at least one container object.

9. (Currently Amended) The method of claim ~~2~~1 wherein executing a proxy further comprises:

determining if a cache entry exists for the occurrence of the at least one object;
if a cache entry is not found,
allocating a new cache entry; and
streaming out a cache entry value.

10. (Original) The method of claim 9 wherein determining further comprises:

matching cache criteria for the cache entry;
if the cache criteria does not match,
allocating an underlying object associated with the proxy, and
executing the underlying object; and
if the cache criteria matches,
constructing a cache key.

11. (Original) The method of claim 10 wherein constructing a cache key further comprises:

matching at least one input parameter against at least one cache criteria entry.

12. (Original) The method of claim 9 wherein determining further comprises:

examining the cache using a cache key.

13. (Original) The method of claim 9 wherein allocating a new cache entry further comprises:
- creating a new cache entry;
 - allocating an occurrence of a caching base agent; and
 - executing the caching base agent.
14. (Original) The method of claim 13 wherein creating the new cache entry further comprises:
- creating a new key; and
 - reserving the new cache entry corresponding to the new key.
15. (Original) The method of claim 13, wherein executing the cache base agent further comprises:
- creating a buffer entry to capture output data;
 - allocating an underlying object associated with the proxy;
 - executing the underlying object to stream out the output data to the buffer entry,
 - wherein the executing comprises,
 - executing a proxy if the at least one object is a proxy,
 - executing a component if the at least one object is a component, and
 - executing a container if the at least one object is a container; and
 - transferring the buffer entry to the new cache entry.
16. (Original) The method of claim 9 wherein determining further comprises:
- determining if the cache entry is empty; and
 - streaming out an error message if the cache entry is empty.

17. (Original) The method of claim 1 wherein the at least one object comprises all components within the page of data.

18. (Original) The method of claim 1 wherein the at least one object is an executable object.

19. (Original) The method of claim 1 wherein the at least one object is a component, a proxy, or a container.

20. – 23. (Canceled)

24. (Currently Amended) A system for streaming a page of data, the system comprising:
means for allocating at least one object corresponding to the page of data, the page of data including one or more sub-components; and

means for executing the at least one object within a single request to an application server to provide the page, wherein, for each of the sub-components, means for executing comprises,

means for creating a proxy corresponding to the sub-component, the proxy representing a functionality of an object corresponding to the sub-component,

means for having the proxy to return the data corresponding to the sub-component to the at least one object if the corresponding data is in a cache memory without executing the object corresponding to the sub-component in order to obtain the data corresponding to the sub-component,

if the corresponding data is not in the cache memory, means for having the proxy to create the object corresponding to the sub-component, to execute the object via a container associated with the object to generate the data corresponding to the sub-

component, to return the generated data to the at least one object, and to store the data in the cache memory, including

generating at least one container object from the container, and

executing the at least one container object, including

executing a proxy if the at least one container object is a proxy,

executing a component if the at least one container object is a component,

and

executing a container if the at least one container object is a container; and

recursively performing allocating and executing the at least one object to process at least one sub-object contained within the at least one object.

25. (Canceled)

26. (Currently Amended) An article of manufacture including one or more computer-readable media with executable instructions therein, which, when executed by a processing device causes the processing device to:

allocate at least one object corresponding to the page of data, the page of data including one or more sub-components;

execute the at least one object within a single request to an application server to provide the page, wherein, for each of the one or more sub-components, the executing comprises,

create a proxy corresponding to the sub-component, the proxy representing a functionality of an object corresponding to the sub-component,

have the proxy to return the data corresponding to the sub-component to the at least one object if the corresponding data is in a cache memory without executing the object

corresponding to the sub-component in order to obtain the data corresponding to the sub-component,

if the corresponding data is not in the cache memory, have the proxy to create the object corresponding to the sub-component, to execute the object via a container associated with the object to generate the data corresponding to the sub-component, to return the generated data to the at least one object, and to store the data in the cache memory, including

generating at least one container object from the container, and

executing the at least one container object, including

executing a proxy if the at least one container object is a proxy,

executing a component if the at least one container object is a component,

and

executing a container if the at least one container object is a container; and

recursively performing allocating and executing the at least one object to process at least one sub-object contained within the at least one object.

27. (Canceled)

28. (Currently Amended) A system for streaming a page of data, the system comprising:

a base agent processing unit to allocate at least one object corresponding to the page of data within a single request to an application server to provide the page, the page of data including one or more sub-components;

an object processing unit to execute the at least one object if the at least one object is a component to perform a task of the component and to execute each of the sub-objects contained within the at least one object if the respective object is a container; and

a proxy processing unit to execute the at least one object if the at least one object is a proxy, wherein for each of the sub-components, the proxy processing unit returns data corresponding to the sub-component to the base agent processing unit from the cache memory if the corresponding data is in the cache memory without executing the object corresponding to the sub-component in order to obtain the data corresponding to the sub-component, and wherein if the data is not in the cache memory, the proxy processing unit creates an object corresponding to the sub-component and invokes the object processing unit to execute the object to generate output data, returns the output data to the base agent processing unit, and stores the output data in the cache memory, including

generating at least one container object from the container, and

executing the at least one container object, including

executing a proxy if the at least one container object is a proxy,

executing a component if the at least one container object is a component,

and

executing a container if the at least one container object is a container, and

wherein the base agent processing unit recursively performs allocating and executing the at least one object to process at least one sub-object contained within the at least one object.

29. (Original) The system of claim 28 wherein the base agent processing unit allocates an occurrence of an associated base agent corresponding to the page of data.

30. (Original) The system of claim 29 wherein the object processing unit further calculates output data for the component, and streams out the data to the associated base agent.

31. (Original) The system of claim 30 wherein the object processing unit further calls a stream result method of the associated base agent.
32. (Original) The system of claim 30 wherein the object processing unit creates a reference to the associated base agent within the component.
33. (Original) The system of claim 29 wherein the object processing unit generates at least one container object from the container, and executes the at least one container object, wherein executing comprises.
34. (Original) The system of claim 33 wherein the object processing unit executes a proxy if the at least one container object is a proxy, executes a component if the at least one container object is a component, and executes a container if the at least one container object is a container.
35. (Original) The system of claim 28 wherein the base agent processing unit further allocates an occurrence of at least one associated base agent corresponding to the page of data.
36. (Original) The system of claim 35 wherein the proxy processing unit further determines if a cache entry exists for the occurrence of the at least one object, allocates a new cache entry if a cache entry is not present, and streams out a cache entry value.
37. (Original) The system of claim 36 wherein the proxy processing unit matches cache criteria for the cache entry, allocates an underlying object associated with the proxy and executes the underlying object if the cache criteria does not match, and constructs a cache key if the cache criteria does match.

38. (Original) The system of claim 37 wherein the proxy processing unit further matches at least one input parameter against at least one cache criteria entry.
39. (Original) The system of claim 36 wherein the proxy processing unit further examines the cache using a cache key.
40. (Original) The system of claim 36 wherein the proxy processing unit further creates the new cache entry in the cache, allocates an occurrence of a caching base agent, and executes the caching base agent.
41. (Original) The system of claim 40 further comprising a caching agent processing unit to create a buffer entry to capture output data, allocate an underlying object associated with the proxy, execute the underlying object, and transfer the buffer entry to the new cache entry.
42. (Original) The system of claim 41 wherein the caching agent processing unit executes a proxy if the at least one object is a proxy, executes a component if the at least one object is a component, and executes a container if the at least one object is a container.
43. (Original) The system of claim 36 wherein the proxy processing unit determines if the cache entry is empty, and streams out an error message if the cache entry is empty.
44. (Original) The system of claim 28 wherein the at least one object comprises all components within the page of data.

45. (Original) The system of claim 28 wherein the at least one object is an executable object.
46. (Original) The system of claim 28 wherein the at least one object is a component, a proxy, or a container.
47. (Canceled)
48. (Currently Amended) A computer implemented method for streaming data, the method comprising:
- a Web server receiving a request for a URL (uniform request locator) page of data from a client over a wide area network (WAN) and the Web server transferring the request to an application server;
 - the application server creating a base agent associated with the requested URL page and executing a method of the base agent, wherein executing a method of the base agent includes determining which object is associated with the requested URL page, allocating the determined object, and executing a method of the allocated object by passing one or more input parameters related to the requested URL page to the allocated object, wherein executing a method of the allocated object comprises
 - if the object is a container, the container determining all of the sub-objects contained within the container, allocating each of the sub-objects, and executing a method of each sub-objects to cause each sub-object to stream out its own data to the base agent,
 - if the object is a component, streaming out an output of the component to the base agent, and

if the object is a proxy, determining whether the input parameters match one or more cache criteria for an underlying object, determining whether there is an entry within a component cache if the input parameters match the one or more cache criteria, and streaming out the requested data from the component cache if the entry is found in the component cache.

49. (Currently Amended) The method of claim ~~49~~48, further comprising:
- if an entry is not found in the component cache, the proxy reserving an entry in the component cache based on the input parameters;
- the proxy requesting the object application to initiate an embedded execution of a caching base agent for the underlying object to be cached;
- the cache base agent executing a method of the underlying object to stream out output of the underlying object to a buffer containing accumulated output of the underlying object; and
- the proxy saving the buffer into the reserved entry in the component cache and streaming data of the reserved entry to the caching base agent which in turn streams the data to the client.